a1

15. A laser diode emitting a beam having a profile, comprising:

a vertical resonator; and

a laser diode beam profile shaper having at least one decoloring absorber (5) in said vertical resonator.

16. The laser diode according to claim 15, including at least one pn junction having a material selected from the group consisting of III-V compound semiconductor material and II-VI compound semiconductor material.

17. The laser diode according to claim 15, wherein said at least one absorber (5) is monolithically integrated into a series of layers.

18. The laser diode according to claim 17, wherein:

said series of layers has a Fabry-Perot resonator; and

said at least one absorber (5) is disposed in said Fabry-Perot resonator.

19. The laser diode according to claim 16, wherein:

a1 cont

said pn junction has a depletion zone; and

said at least one absorber (5) is disposed outside said depletion zone.

20. The laser diode according to claim 15, wherein said at least one absorber (5) is formed as a layer in said vertical resonator, said layer having a thickness approximately equal to a quarter of a material wavelength.

21. The laser diode according to claim 15, wherein said at least one absorber (5) is formed as a layer having a thickness greater than a quarter of a material wavelength.

22. The laser diode according to claim 15, wherein said at least one absorber (5) is formed as a layer in said vertical resonator, said layer having a thickness greater than a quarter of a material wavelength.

23. The laser diode according to claim 15, wherein said at least one absorber (5) has a current constrictor.

24. The laser diode according to claim 23, wherein said current constrictor is a combination of a medium of said absorber with one of the group consisting of an oxide aperture and proton implantation.

a7 cont

25. The laser diode according to claim 15, wherein said at least one absorber (5) has a means for current constriction

26. The laser diode according to claim 25, wherein said current constricting means is a combination of a medium of said absorber with one of the group consisting of an oxide aperture and proton implantation.

27. The laser diode according to claim 16, wherein said pn junction has a p-contact and an n-contact each to be connected to a respective one of two electrical supply leads.

28. The laser diode according to claim 15, wherein said vertical resonator has a means for current constricting (53).

29. The laser diode according to claim 15, wherein said vertical resonator has a current constrictor (53).

30. The laser diode according to claim 15, including at least one reflector layer (2, 6) having a relief structure for improving a mode selection.

31. The laser diode according to claim 16, wherein said relief structure is a Fresnel lens.

a7 cont

32. The laser diode according to claim 15, wherein said vertical resonator has at least one spacer layer.

33. The laser diode according to claim 32, wherein:

said vertical resonator has an absorber layer (50) and an active zone (4); and

said at least one spacer layer is disposed between said absorber layer (50) and said active zone (4).

34. The laser diode according to claim 33, wherein at least one layer of said vertical resonator is of one of the group consisting of GaAsN and InGaSbP.

35. The laser diode according to claim 29, wherein:

said vertical resonator has layers; and

at least one of said layers of said vertical resonator is of one of the group consisting of GaAsN and InGaSbP.

36. A laser diode emitting a beam having a profile, comprising:

3 a vertical resonator;

a7 cont

a means for shaping the beam profile connected to said vertical resonator; and

said shaping means having at least one decoloring absorber (5) in said vertical resonator.

37. In an optical system, a laser diode emitting a beam having a profile, the laser diode comprising:

a vertical resonator; and

a laser diode beam profile shaper having at least one decoloring absorber (5) in said vertical resonator.

38. In a compact disc player, a laser diode emitting a beam having a profile, the laser diode comprising:

a vertical resonator; and

a laser diode beam profile shaper having at least one decoloring absorber (5) in said vertical resonator.

39. In a data transmission system, a laser diode emitting a beam having a profile, the laser diode comprising:

a vertical resonator; and

a laser diode beam profile shaper having at least one decoloring absorber (5) in said vertical resonator.